

Amendments to the Specification

Please replace the paragraph at page 2, lines 5 through 16 with the following amended paragraph:

HBTs, however, can suffer from the disadvantage of having an abrupt discontinuity in the band alignment of the semiconductor material at the heterojunction can lead to a conduction band spike at the emitter-base interface of the HBT. The effect of this conduction band spike is to block electron transport out of the base into the collector. Thus, ~~electron~~ electrons stay in the base longer resulting in an increased level of recombination and a reduction of collector current gain (β_{dc}). Since, as discussed above, the turn-on voltage of heterojunction bipolar transistors is defined as the base-emitter voltage required to achieve a certain fixed collector current density, reducing the collector current gain effectively raise the turn-on voltage of the HBT. Consequently, further improvements in the fabrication of semiconductor materials of HBTs are necessary to lower the turn-on voltage, and thereby improve low voltage operation devices.

Please replace the paragraph at page 4, lines 6 through 11 with the following amended paragraph:

Another method of minimizing the conduction band spike is to include one or more transitional ~~layer~~ layers between the heterojunction. Transitional layers having low band gap set back layers, graded band gap layers, doping spikes or a combination ~~[[of]]~~ thereof can be used to minimize the conduction band spike. In addition, one or more lattice-matched layers can be present between the base and emitter or base and collector to reduce the lattice strain on the materials at the heterojunction.